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ABSTRACT

The social science curriculum must be supported by four pillars, the first of which represents value awareness. Social science programs must deal with values in order to help students set goals for themselves as individuals and as members of society. Students should be taught the importance of the values of this democratic society. The second pillar represents a combination of social reality and problem awareness. Social reality awareness helps one to understand that the natural and manmade environments are changing all the time due to natural forces, science and technology, and changes in value preferences. The third pillar represents system awareness, which means that everything is related to everything else. The fourth pillar represents a combination of knowledge and multidisciplinary awareness. Students should be able to discover the underlying conceptual design of this seemingly chaotic world. As a result of increasing specialization, knowledge becomes more and more fragmented. The different branches of knowledge have been captured by specialists, and no networks have been built between disciplines to facilitate communication among specialists. Multidisciplinary awareness must be fostered and must include the humanities in the social science curriculum. Classroom activities are presented that incorporate the ideas presented. An appendix includes charts outlining the fundamental ideas of general systems theory, economics, political science, sociology, cultural anthropology, and social psychology. (JB)

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THE FOUR PILLARS OF THE SOCIAL SCIENCE CURRICULUM

by

Lawrence Senesh

Presented at the 1989 Annual Conference of the
Social Science Education Consortium:
Linking Diverse Fields of Knowledge

24 June 1989
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About 25 years ago, a distinguished group of social scientists met in Lafayette, Indiana, to establish the Social Science Education Consortium.

The late 1950s provided a climate favorable to social inquiry. Many educators, academicians, and professional associations became interested in relating the classroom to social realities—just as, in the 1930s, the Depression had generated interest in organizing the social science curriculum around social problems. In the late 1950s the motivating force was the growing protest movement.

Many students participating in the social protest movement had taken the American dream seriously and had discovered that our pledge of allegiance to "one nation, indivisible, with liberty and justice for all" was not a reality. Following the Supreme Court decision of 1954, the fight for racial equality became a national movement. It awakened the conscience of many white Americans and the self-consciousness of black Americans. Students protested against the inability of economic growth to bring forth social justice and equality. They protested against the draft system because it gave exemption to college students and pushed youth who could not afford to go to college into military service. They protested against excessive consumerism at the expense of a deteriorating environment. They articulated a new social goal, "quality of life." Concern for clean air, open space, and less noise entered the American consciousness. Environmental organizations grew up all over the country. Youth demanded a simple lifestyle. Many students were dissatisfied with their education and agreed that what they were learning was not relevant to the rapidly changing world. Moreover, the kind of world they were being prepared for was one in which they did not care to live.

Students accused scientists of serving the military-industrial complex instead of serving the interests of humanity. They accused the government of misuse of power, of waging an undeclared war thousands of miles away against a tiny, poverty-stricken nation, of using harsh police tactics, of spying on peaceful citizenry, and of official dishonesty about the war.

These were the underlying reasons that moved many social scientists to apply for and receive grants from private foundations and from the government to be used for the development of social science programs that would help students to discover the underlying design of this seemingly chaotic world.

I was one of these social scientists. I received support from the Carnegie Corpo-

ration, the Department of Education, and the National Science Foundation, along with generous support from Purdue University and private grants from Elkhart, Indiana (which was designated as the experimental school system).

Many of us who witnessed the 1960s felt strongly that the schools could play an important role in bringing under control the forces that moved our society toward increasing disarray. Many of us thought that the social studies curriculum was obsolete. We thought that developing social competence and social awareness all the way from Grade 1 through Grade 12 was the answer. In such programs, knowledge is acquired not through rote learning but through reasoning, thinking, analyzing, and creating. In such programs, students ask relevant questions on values—for example, what should the goals of our society be if it wants to build a "more perfect union," and how should we close the gap between our goals and social realities? Which are the dominant values of our society that promote and which are those that hinder the achievement of these goals? What is the purpose of life? What is the meaning of freedom and justice? What is the relationship between materialism and quality of life?

In 1962 Leften S. Stavrianos argued for the proposition that "social studies are now of greater significance than the physical sciences as far as our national survival is concerned." In Elkhart, Indiana, I entered into a partnership with classroom teachers to discover the learning potential of children.

Social science programs sponsored by the federal government and private foundations sprang up all over the country. In 1961, three professional associations launched projects—the Association of American Geographers, the American Sociological Association, and the American Anthropological Association. At the Carnegie Institute of Technology, a team prepared history and social science materials for gifted students in grades 9-12. At the University of Minnesota, a project identified the structure of the social science disciplines and prepared guides for grades K-12. At Harvard University, a social science curriculum was based on an analysis of public issues. At Ohio State University, economists and teachers worked together to analyze the structure of economics as a discipline and to prepare materials for a ninth-grade economics course. A San Jose economist developed a twelfth-grade, one-semester course in economics.

In Monterey, California, the Human Resources Research Organization, under the leadership of J. Richard Suchman, developed a theoretical model of the inquiry process. In

Cambridge, two curriculum projects were produced: *People and Technology* and *Exploring Human Nature*. And in 1963, with National Science Foundation support, the Social Science Education Consortium was founded to identify the conceptual structures of the social science disciplines, out of which my elementary social studies project, *Our Working World*, grew.

Our Working World challenged many of the prevailing curriculum practices.

Many elementary social studies curricula were based on the notion that children cannot understand concepts. "Waiting until the children are ready" was the catch phrase of the time. Educators failed to recognize that most social science concepts are a part of children's daily experiences. In the 1950s, when I was experimenting with concept formation for the elementary grades (with the aid of a Carnegie Grant), many questionnaires came across my desk from doctoral candidates who requested that I identify the ten most important minimum concepts necessary for practicing citizenship.

When I identified, with a team of social scientists, the fundamental ideas of the social science disciplines and related these ideas to children's experiences with increasing depth and complexity, I challenged the minimum understanding approach and launched a new curriculum model in social science education.

In my project, the social science disciplines were not taught to be memorized. Instead, they were tools to help children to understand how the real world operates. They help to make the experiences of children more meaningful. They help youth discover the multidisciplinary nature of causes and solutions of social problems. They help to build the bridge between theory and practice.

Before the 1950s the social science curriculum lacked analytical depth. There was a general belief that the teaching of scientific concepts had no place in elementary grades—for example, children played "grocery store" without any reference to the concepts of risk, price, cost, profit, loss, and competition.

Children visited banks to "discover" that the purpose of banks was the safekeeping of money. Much later they might chance to discover that banks are the source of capital formation.

Building the bridge between scientific concepts and the social reality of the child is a highly sophisticated task. *Our Working World* liberated teachers from the counterpro-

ductive task of developing units or curriculum guides, which frequently lacked substantive standards and information. *Our Working World* enabled the teacher to use carefully designed classroom materials, to adjust them to particular situations, and to modify them according to the teacher's imagination.

I strongly disagree with the opinion of some educators that programs that bridge content and methodology deprofessionalize classroom teachers by depriving them of the task of curriculum development.

Ladies and Gentlemen: The social science curriculum must be supported by four pillars. The first pillar represents value awareness.

In the traditional social studies program, societal values were ignored. Even the recent commitment to value awareness is largely limited to clarification of the individual's values. Whatever the reason, the fact remains that most teachers do not deal with value issues in any sort of conscious, definite, clearly stated way as part of their instructional efforts. Such value-neutral instruction of our young society is similar to a colorblind person teaching painting.

Social science programs must deal with values in order to help students set goals for themselves, both as individuals and as members of society. Students should be taught the importance of the values of our democratic society that have evolved during American history. They should understand that, just as happens to metal structures, some values suffer from fatigue or exhaustion, while others gain strength due to changing science and technology and changing priorities. The social science curriculum must help individuals and groups discover basic, common values. If not, society will be destroyed in value anarchy.

Values give goals to society and the social system.

The economic system is a goal-oriented system; it is committed to economic growth, economic stability, economic security, economic freedom, and economic justice.

The political system is a goal-oriented system. In the United States, the goals of the political system are expressed in the Declaration of Independence and the Constitution. Let me quote from the Declaration of Independence:

"We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, and that among these are life, liberty, and the pursuit of happiness."

Here is a quotation from the U.S. Constitution:

"We, the People of the United States, in order to form a more perfect union, establish justice, ensure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America."

Values give goals to the global system through the Universal Declaration of Human Rights. This is what it says:

"All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act toward one another in a spirit of brotherhood."

The value system that helps us to build a more perfect union is made up of two components. One component enables scientific inquiry, based on cold knowledge without a trace of deception. This component is the commitment to the search for truth. The search for truth requires complementary value commitments of freedom, justice, and integrity. Without these commitments, additional truths could not be discovered.

The purpose of scientific inquiry is to make a more coherent picture of the world. But our commitment to the search for truth creates more uncertainties. The scientific mind opens new avenues with each step of inquiry. Each answer poses new questions.

Our social system cannot tolerate the widening gap between science and society. The steady search for truth must become a part of the classroom experience. The task of the social science educator is to put the cutting edge of knowledge into the public domain, where the people can use it to their benefit.

Besides the search for truth, the other component of our value system necessary to build a more perfect union is the ethical component. This component enables us to articulate our commitment to the idea that other people matter. The ethical component requires the complementary value commitments of love, kindness, and charity.

Without love, kindness, and charity, the ethical component (realizing that other people matter) could not function. The separation of the search for truth from its ethical

component of human compassion is the biggest tragedy in our global society, because the pursuit of truth alone does not show how to make use of scientific advancement for human betterment.

Today, the civilized world is threatened with destruction by the physical impact of science and technology. Love and charity are necessary to prevent the inhuman consequences of science and technology. The combination of truth and justice with love and charity should be the purpose of value education.

The second pillar of the social science curriculum represents a combination of social reality and problem awareness.

Social reality awareness helps us to understand that the natural and manmade environments are changing all the time due to natural forces, science and technology, and changes in value preferences. Adult members of society are no longer monopolizing the awareness of social reality. Our youth in very early years are exposed to the successes and frustrations of society. They experience pollution, unemployment, riots, poverty, drug abuse, child abuse, alcoholism, juvenile delinquency, floods, hunger, terrorism, and war.

There should be intergenerational dialogues in the schools and community about what is happening locally, across the nation, and around the world. Dialogue is lacking at a time when society is threatened by social breakdown in Lebanon, northern Ireland, South Africa, Chile, Nicaragua and El Salvador, India, Pakistan, Sri Lanka, Uganda, the Philippines, and many other parts of the world. Social breakdown threatens us at home. We are afraid to walk on our streets or in our parks at night. We fear the effects of the drug culture. The notions of active citizenship and public virtue are vanishing. Private interests are in control. Humans are free only when they belong to a concerned community, helping one another to understand and adapt to the constant changes.

Social reality awareness activities should make students aware that events and changes within and outside the community are caused not only by natural forces such as drought, floods, and earthquakes, but also by human actions such as inflation, unemployment, and lack of education. Whatever their causes, these events and changes affect the welfare of the community and the options of individuals.

The recognition of the gap between the social values and social reality gives birth to the social problem.

Once I asked fifth graders which country had more social problems, a poor country or a rich one. Their answer was a poor country. I responded that they were wrong, since only a rich country can afford to have social problems. Since most of the boys and girls were black and Puerto Rican, I encouraged them to use their imagination to identify what they considered to be a good society and then compare their dream with the real world, since democracy can survive only if we try to make our dreams come true through political action. After the class, I was speaking to the principal of the school when suddenly I saw a delegation from the fifth grade class in the waiting room. They wanted to talk to me. I went to them and asked what they had on their minds. They asked me, "Professor, do you know any other professors who care for people?" This experience is deeply engraved in my memory, and I hope I will never forget it.

I developed the following six steps to be used in studying social problems. Take, for example, the problem of the deterioration of the environment. In studying that particular problem, students could follow these steps:

- *Step One* is recognizing the symptoms of the problem, knowing that something is wrong. Some symptoms of environmental deterioration include smoke in the city, oil spills in the sea, acid rain, nuclear fallout, and disposal of chemical wastes in the rivers or on the land.

- *Step Two* is recognizing the aspects of the problem. This refers to the question of why society should recognize and be interested in the problem. This step gives students an opportunity to develop multidisciplinary awareness. Pollution comes with a cost to nature, property, health, beauty, the individual, and the city.

- *Step Three* is defining the problem, which reflects the gap between the goal and the social reality. How can we establish and preserve an environment where health, safety, and beauty prevail?

- *Step Four* is understanding the scope of the problem, which is a statistical measurement. How bad is the situation? At this step, students gather statistics on the degree of air, water, soil, and noise pollution.

- *Step Five* is recognizing the causes of the problem. Man wishes to conquer nature. Technological advancement enables man to toss around incredible amounts of material, to move earth and mountains. Society fails to recognize nature as a sensitive,

non-goal-oriented system that has no built-in mechanism to correct the destruction caused by technology.

Another reason could be the narrowing time gap between invention and innovation. For instance, it took 112 years from the development of the theory of photography to the invention of the first camera, 65 years to build the electric motor, 12 years to build the first television camera, and only six years from the splitting of the atom to the atomic bomb. This gap has aggravated the deterioration of the environment.

The market system is also contributing to the deterioration of the environment, since it is based on property rights. Air and water are not owned privately; they are considered free goods. Consequently, these public goods are abused.

Another reason for environmental deterioration is senseless consumption, which leads to degradation of the environment. For a long time, consumer choices were considered rational. Thorstein Veblen, in *The Theory of the Leisure Class*, brought to the public's attention the senselessness of conspicuous consumption.

- *Step Six* is the solution of the problem. Students at this point investigate what individuals, volunteer groups, and government can do to solve the problem. Some individual efforts may be discussed in terms of developing rational standards of consumption. Voluntary effort may be discussed in terms of what a community can do to prevent pollution and correct or clean up polluted environments. In discussing government efforts, students may discuss the various legal restrictions, the introduction of user fees, or the dispersal of cities as some of the measures government may undertake.

Students can also discuss the Preamble of the Environmental Policy Act of 1969, which states,

"The purpose of this bill is to declare a national policy that will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of ecological systems and natural resources important to the nation."

The third pillar of the social science curriculum represents system awareness, which means that everything is related to everything else. One area of frontier knowledge is

general systems theory, an area which should long ago have been incorporated into the K-12 curriculum. Students must became aware that the lack of system vision in decision making creates serious damage in the natural and manmade environments. The highway engineer has only one ambition—to build more highways. The aeronautical engineer has only one ambition—to build larger, faster airplanes. The nuclear engineer has only one ambition—to solve the energy crisis by building a multitude of nuclear plants. Neither these nor other specialists realize the impact of their demands upon the rest of the system.

My interest in teaching general system theory to children was awakened on the school playground in Brooklyn, New York, the day after the astronauts landed on the moon. Cutting across the schoolyard, I noticed children playing astronauts. One child made the countdown: "Ten, nine, eight, seven, six, five, four, three, two, one, liftoff!"

Another child announced: "All systems go!"

A third and fourth child communicated with each other through a makeshift microphone, holding their hands to their mouths. You could hear "Contact," and "Roger." I said "Roger," too, because the children stirred my imagination and saved my day in the third-grade classroom, where I was headed to give a demonstration lesson on city planning.

In the classroom, the dialogue between the children and me went like this:

"How many of you watched the astronauts take off from Cape Kennedy and land on the moon?" (All the children raised their hands.)

"What did the Houston announcer say which confirmed a smooth take-off?" ("All systems go!")

"What did this statement mean?" ("It meant that man and machines were working together well at that moment to put the astronauts on the moon.")

"Can you describe the tasks of some of the people and machines which had to work together?" ("The computers had to be working, and the computer specialists had to analyze the printouts; weathermen had to decide whether it was good enough weather for takeoff; communications equipment had to be in good order, and radio operators had to operate it; the rockets and boosters had to function, etc.")

"What would happen if any one part would fail?" ("It would affect the other parts.")

"If something goes wrong, who will make it right?" ("Sometimes the machine, computer, or thermostat; sometimes the people in the Space Center or the astronauts.")

"So, boys and girls, we can say that a system is made up of many parts; that the entire system has a goal (to put the astronauts on the moon); that the parts must interact to reach the goal; that if something goes wrong, the machine or people must correct the errors."

"Now, children, let us study the City of New York. Is the city a system?" ("Yes.")

"Why?" ("Because it is made up of many parts, of many smaller systems.")

"Name some of the systems." ("Roads, transportation, communications, sewage, electrical, school, housing, public health, business, legal, parks and recreation, water systems.")

"These are the systems that work together within a larger system to accomplish goals. What are these goals?" ("A beautiful, healthy, and safe city—a city with a livelihood for everyone.")

"Can we say about New York city, 'All systems go!'?" ("No.")

"Why not?" ("Unlike the space program, where the goal of landing on the moon has been reached, the goals of New York—to build a beautiful and safe city, a city where people who are looking for a job can find one—these goals have not yet been realized.")

The children had discovered that the various components of the New York City system do not work properly together to accomplish these goals. For example, the educational and business systems are not working properly together to provide jobs for youth. The housing, business, and transportation systems in many neighborhoods are badly coordinated to get breadwinners to their working places cheaply and quickly. The school, housing, and park systems are also badly matched.

Frequently, changes create serious dislocations that may become permanent defects of the system. As an example, the children acted out what could happen to the family, business, and school systems if the city decided to tear down old houses where poor families lived and replace them with big buildings for high-income families and expensive offices. Students may also act out what would happen to the business, school, playground, transportation, and sewage systems if New York City decided to build a housing project

for many hundreds of low-income families. The task of planning is to find out how the subsystems of a city must work together to help the city reach its goals.

At the close of the project, I asked the children to prepare a mobile from clothes hangers. Hanging from the end of each arm was a subsystem. If the children touched any one subsystem, the others were affected, bringing the system nearer to or farther away from the goals of the system—the achievement of beauty, health, safety, and livelihood.

I prepared Chart 1 (see appendix) to present the fundamental ideas of the general systems theory that I introduced in the first grade.

The fourth pillar of the social science curriculum represents a combination of knowledge and multidisciplinary awareness.

Students should be able to discover the underlying conceptual design of this seemingly chaotic world. With the help of a grant from the National Science Foundation and another from the Carnegie Corporation, I developed, with a team of social scientists, matrices of the fundamental ideas of economics, political science, sociology, anthropology, and social psychology.

I then tested the ability of children to relate their everyday experiences to the fundamental ideas of these disciplines. I found that first graders' experiences are potentially so meaningful that they can be related to these fundamental ideas with increasing depth and complexity as the children move from grade to grade.

I called this "The Organic Curriculum" because the intellectual structure of the social science disciplines grows like an organism with the growing maturity of the child toward adulthood. The fundamental ideas of the social sciences are centered around the process of negotiation:

> In economics, negotiation takes place in the market, between people's unlimited wants and limited resources;
>
> In political science, negotiation takes place between unlimited political demands and the allocation of scarce resources by authority;
>
> In sociology, negotiation takes place among organizations and groups with their competing value preferences;
>
> In social anthropology, negotiation takes place between tradition and change due to changing science and technology and changing value preferences;

In social psychology, negotiation takes place between personalities and social situations.

Let me give you a few examples how to relate social science concepts to the experiences of elementary school children. (Please see Chart 2 in the appendix on "Fundamental Ideas of Economics.")

- *People have unlimited wants, but the world's resources are limited.* Children may draw pictures of things they would like to have. The teacher will collect the pictures and discuss how many minerals would have to be mined, how much steel and machinery would have to be made, how much food would have to be produced, how many trees would have to be cut from the forests, how much wool would have to be taken from the sheep, and how much fur be taken from furry animals if all the wishes of everyone in the world would be fulfilled.

  Students in higher grades might interview their parents about how much annual income the parents would like to have to live a happy life. The teacher should multiply these incomes by the population of the nation and show that the total desired income far exceeds the actual national income.

  Students in higher grades might discuss the consequences of the demands of the Third World countries for a new world order. This order would be based on the redistribution of wealth according to the density of the population.

  A student panel could contrast the desire for more and more with the Buddhists' consumer ethic, which believes that maximum well-being can be achieved with minimum resources.

- *Because we have unlimited wants and limited resources, we have to learn how to make choices at any one time and between the present and future.* The teacher or the class may read a fairy tale about three wishes. The discussion should help children discover how foolish some choices can be. The teacher may read the stories *Rosalind and the Purple Jar* and *Two Pesos for Catalina.* In a discussion of the two stories, the children can discover how differently people are motivated in their choices—some by selfishness and some by generosity.

  Students should watch television or newspaper advertising and discuss: Does advertising help us to make wiser choices or does it just encourage consumerism?

To learn how to make wise choices in the primary grades, the children may come in from the school playground to find on a table in the classroom four bottles of Coca-Cola, three sandwiches, four boxes of crayons, four comic books, and four ear muffs. The class will observe one student, who will be allowed to choose one of these objects. He will probably choose a bottle of Coca-Cola. Permitted another choice, he may choose another bottle of Coca-Cola. Offered a third choice, what will he take? Probably a sandwich or a comic book. He and the class may discover that what was at first most important, like the first or second bottle of Coca-Cola, becomes least important, and what was once less important becomes more important.

The teacher may tell an Indian story that shows the importance of choice making between the present and the future. The story is about an Indian group that has meager harvests because of the lack of water. They decide to use their labor and save their material in order to build an irrigation ditch. With irrigation their harvests will be bigger. Here the class can learn the importance of saving and investment. A banker may come to the class and explain the importance of saving for business and for the country.

- *As people fulfill their wishes for more and more goods, they change the environment.* Invite an environmental specialist to the classroom to explain the causes of pollution and the impact on health and the environment.

  The teacher will read or tell the story about a candy factory in a small town. The children like the candy, and it is cheap. One day the factory finds it has a big problem. The factory owner learns that the factory is polluting the river. The owner has two choices: (1) the factory stops polluting the river, in which case the candy will have to cost more because the factory has more costs; or (2) the factory continues to pollute the river and continues to sell the candy cheap. What do you think the factory should do?

- *In the conflict between unlimited wants and limited resources, producers have an important role.* The class discusses their parents' occupations. The children discover that parents are doing useful work and that they are producers of goods and services. The children discover that the purpose of production is consumption. They organize a producers' club and a consumers' club. To become a member of a producers'

club, the children must prove that they are doing useful work. To belong to the consumers' club is easy. All they have to prove is that they consume.

Some years ago I received a letter from a New York lawyer. He reported to me that his first-grade son came home from school one day and said to his mother: "I want to do some useful work, too." The first grader pushed his little sister aside and said: "You can't do useful work. You're only a consumer!"

Children will soon discover that, while everyone is a consumer, not everyone is a producer. The question will be asked: "Who are the non-producers in the family?" The children can identify the too young, the too old, and the sick members of the family. I conducted this discussion in the classroom in a poor neighborhood. The children were reluctant to identify the unemployed members of the family. The children were instructed at home not to tell anyone who is unemployed in their family because the questioner might be a spy from the welfare department.

This exercise in the elementary grades lays the foundation for understanding the principle of transfer payments and the distribution of income.

- *Market determines total level of economic activity.*

Act One. Mr. Baker, Mr. Woolly, and Mr. Hall go to the bank, asking for loans. After the loans have been approved, Mr. Baker, Mr. Woolly, and Mr. Hall buy everything they need for their businesses. Finally, they hire workers. (The children should understand that the three businessmen and the workers represent all the businesses and workers of the whole country.) After simulating production, they put on the table (the marketplace) bread, clothes, and pictures of houses. The workers receive wages, and they go home. The wives then go to the table with the wages and buy everything the market has produced.

Act Two. The businessmen are happy. They are producing everything again and paying the workers their wages. The wives return to the table. This time they do not buy houses because they already have houses; however, they want to buy twice as much clothing and food as they did before.

Act Three. Since the businessmen have not produced enough clothing or food, the price of food and clothing will rise. Mr. Baker and Mr. Woolly decide to enlarge

their factories and produce more food and clothing. They hire the workers who lost their jobs building houses. Everyone is happy again.

Act Four. In the fourth act, Mr. Baker and Mr. Woolly are producing more food and clothing than ever; however, after the workers receive their wages, they talk to their wives and decide to buy less food, no clothing, and no houses.

The clothing factories and the building industry close down. This is a depression.

This little play, which was prepared for elementary school children, was also developed for a twelfth-grade class. I divided the class into the following segments of the economy: producers of durable goods, producers of non-durable goods, producers of services, consumers, government, and the rest of the world. They act out how the decisions of the different segments affect the total level of income and employment—*e.g.*, the producers of durable goods, such as automobiles, decide to cut production because consumer demand increased. The other segments of the economy make statements about how the cut will affect them. The student representing the government may make a policy recommendation to offset the declining income and employment caused by automobile industry policy.

Just as I developed the conceptualization of knowledge in economics and related it to the experience of children, I also developed the fundamental ideas of political science, sociology, social anthropology, and social psychology.

The political system is a process of negotiation. (Please see Chart 3 in the appendix on "Fundamental Ideas of Political Science.") The political system enables us to change political demands into binding decisions. We all participate in this process. We all have certain priorities that we want the political system to accomplish.

The students may interview their parents and friends to identify those demands to which they attach the highest priority. The parents may indicate some demands that have not been fulfilled, leaving them disappointed and frustrated. Students may ask their parents what they can and will do to get the political system in motion so that these demands can become binding decisions.

The students may identify in the local newspaper stories showing that the political demands of one group are often in conflict with the demands of other groups.

The students may have mock debates on such issues as: "The nation should make

available affordable housing for the poor." "Government should not support the poor because they will become lazy." "To fight air pollution, government should regulate the use of private transportation." "The government should subsidize mass transportation." "The government is wasting money by building an airport."

The mock debates can help students discover that the controversies surrounding political demands are usually the result of conflicting interests between people of different civic groups, ethnic groups, political parties, and regions.

Gatekeepers and cleavages in the political process are dramatized with childish humor but with adult sophistication in the story of *Charley's Tooth*. The story is about whether a community should have fluoridization of water and is a good example of making a bridge between the teaching of concepts in the lower and upper grades.

In the United States, the people decide whether the government should produce certain goods and services. These decisions enable the government to pursue the wishes of the people. The people pay taxes or fees for these goods and services.

Two students pretend they want to become lawmakers. Both give speeches. One promises lower taxes if voters are willing to give up such services as special education for slow learners, cheap lunches for school children, and cheap food for needy families. The other person who wants to be elected does not promise lower taxes. He argues for better education, better housing for the poor, and better recreation facilities. The class can discuss the ideas of the two candidates. Both candidates think they are doing something good for the country, but they have different ideas about what is good.

The sociological system is a process of negotiation between conformity and change. (Please see Chart 4 in the appendix on "Fundamental Ideas of Sociology.")

The dominant values of the United States are recognized as: achievement, work ethic, moral orientation, efficiency, progress, material comfort, conformity, nationalism, competition, cooperation, individualism, racism, belief in science and technology, and democracy. The teacher can make 3x5 cards of these values and put them in a box. Then students can pull cards out and give spontaneous responses to the class about the strengths and weaknesses of the values listed on the cards. A classroom discussion can follow, during which the class may challenge the statements of the students. The teacher may point out the difficulty of living in a society where dominant values are often in conflict

with each other.

The students may act out short skits on some of the dominant values of our society, and the class may try to guess which of the values is being dramatized (*e.g.*, individualism). The skit should portray a situation in which an individual has the courage to stand up for his own actions and ideas. The concept of cooperation could have a situation in which an individual is willing to give up his own interest to promote the welfare of the group. Volunteer spirit could portray a situation in which an individual gives time, talent, and money to help solve social problems.

The core idea of cultural anthropology (please see Chart 5 in the appendix on "Fundamental Ideas of Cultural Anthropology") is the dislocation caused by science and technology—such dislocation can cause the evolution, survival, or annihilation of civilization. This idea must be a continuing theme in every grade. Every generation encounters the fast advancement in science, and with every scientific discovery and its accompanying technology, uncertainty increases. As I wrote my books for the elementary grades, I chose to illustrate this relationship by the Chicago World's Fair. The date was 1 May 1893.

Crowds of people came to Chicago to witness the marvels of modern technology. The fair gave people some idea of what life might be like in the future. The largest building was the manufacturing building. It was all white and brightly lighted. Because of the bright lights and the big white building, the fair was called the White City. The fair made it clear that science and industry could raise the standard of living and open the door to a comfortable life for the nation. For the first time, people believed that they could wipe out poverty.

After I described the scientific and technical wonders of the time, I wrote: "The fair was a beautiful and splendid success. It showed the wealth, power, and ideas of modern society. But there was a dark side to modern life that the fair did not show. For every scientific advance, there was a cost as well as a benefit. The costs were both social and economic. Outside the gates of the White City, clouds of sooty smoke rose from the smoke stacks. Chemicals and sewage from the factories poured into the Chicago River. Laundry that was hanging on the clothes lines became dirty. People complained of sore eyes and bad smells. This unpleasantness was not only in Chicago, but was also in most United States cities."

I ended this chapter with the following statement: "The World's Fair of 1893 was a

symbol of new ideas that test a social system. The ideas presented there tested the belief that scientific progress would lead to a better life for the American people." The testing of these ideas should be a core idea for the social science curriculum. Classrooms of every grade should be kept up-to-date with scientific progress, and students should be shown how this fast-accumulating knowledge should be used for the evolution of civilization.

The core idea of social psychology (please see Chart 6 in the appendix on "Fundamental Ideas of Social Psychology") is how an individual can deal effectively with various forces while maintaining a personal identity. The best way I can illustrate this point is with a story a student of mine wrote in a course I conducted on *Structuring Knowledge in the Social Sciences,* in which I encouraged creative writing.

Sammy's Hero

Sammy was a boy living in Denver, Colorado, at the tender age of seven years old. Sammy's favorite thing to do was watch television. Like all little boys and girls, Sammy had a favorite program that he liked to watch. Sammy's favorite show was *Hardnose Alley.* The program was very similar to that of other television shows with lots of shooting and violence. Sammy's hero was Hardnose Harry, the toughest crook on television. Hardnose Harry could beat up everybody in the alley, and because he was so tough, people would step aside when he walked down the street. Sammy's favorite program was on every day after school. He was always on time when his mother came to pick him up from school because he didn't want to miss *Hardnose Alley.*

One day after school, Sammy was anxiously standing around on the corner waiting for his mother to come so that he could rush home to turn on TV. Sammy saw a boy he didn't know sliding down the slide on the playground. Sammy went over to the boy and kicked sand in his face, pushed him around, and told him to watch out because this was his territory and nobody messes around with Sammy and gets away with it. Sammy smiled at his impressive actions. But to his surprise, the young boy started crying and ran away as fast as he could.

Sammy was very quiet on the way home in the car with his mother. He couldn't figure out why the boy on the playground reacted the way he did. When Sammy got home, he soon forgot about the incident. After all, *Hardnose Alley* was on television, and that was Sammy's favorite program.

1. Why do you think Sammy kicked sand in the other's boy's face and called him names?

   Answer: Because he had been influenced by the television program, *Hardnose Alley.* Sammy patterned his actions after his TV hero.

2. Do you have any heroes on television that you pattern your actions after? If so, whom?

3. Do you think that all children who watched the program *Hardnose Alley* would be affected in the same manner as Sammy? Why?

   Answer: No, people react to different situations in different ways. Sammy's father may have been a tough man, which made Sammy admire such a character. Or another interaction with someone (friend, teacher, parent, etc.) may have put Sammy in a "weak" position that he didn't like.

As a result of increasing specialization, knowledge becomes more and more fragmented. The different branches of knowledge have been captured by specialists, and no networks have been built between the disciplines to facilitate communication between specialists in the various branches of knowledge.

Society in the United States faces a new situation. The general welfare can no longer be assured by guaranteeing freedom to science and technology. The use of technology should be governed, encouraged, and monitored by national policies that reflect not only scientific but also social and ethical principles. The formulation of such policies depends upon the ability of academicians to penetrate the walls between the disciplines by multidisciplinary awareness.

The lack of communication causes perverse situations. Economists study economic development without insights into the cultural patterns of society. Anthropologists with little or no economic competence study the economic life of African tribes.

There is an increasing recognition of the need to raise the standard of living of rural populations in developing countries. For years we have believed that the secret of success is the development of new technology. We believed that the information network would perform magic, but the magic failed because:

The infrastructure was ignored;

The uneven distribution of political power and vested interests was ignored;

The consideration of dominant values was ignored;

The appropriateness of technology was not questioned.

The lack of multidisciplinary vision in our society was demonstrated in recent weeks when two scientists announced that they had achieved room-temperature nuclear fusion.

The news spread, and it was received with limitless optimism. But now that the first waves of astonishment, wonder, and euphoria have passed, scholars with system vision have begun to have troubling thoughts.

Jeremy Rifkin, author-activist, laments: "It is the worst thing that could happen to our planet." Inexhaustible power, he argues, only gives humanity an infinite ability to exhaust the planet's resources, to destroy its fragile balance, and to create unimaginable human and industrial waste.

Worst of all, cheap, inexhaustible energy would let the planet support many more people than its current population of 5.2 billion. The question must be asked: What would a crowded earth be like—without forests, wilderness, open space, or the chance for solitude? Even if fusion turns out as well as hoped, it will not be a panacea. Most problems in the Third World, for example, are social, political, cultural, or economic and *not* technical. The idea that you can solve the human dilemma with a single technological breakthrough is incorrect.

To those people old enough to have been present for the original debates on nuclear fission, the unbridled enthusiasm for fusion power may sound strangely familiar. In 1946, a famous physicist named Arnold Sommerfeld predicted that, with the development of nuclear energy, electricity would be "too cheap to meter," and nuclear energy would abolish poverty from the face of the Earth by 1960.

Multidisciplinary awareness must include the humanities in the social science curriculum. The humanities reflect our increasing effort to make moral, philosophical, and ethical sense of the world. A society without ethical standards seriously undermines the values widely regarded as providing the optimum social framework. History, literature, drama, art, philosophy, and music (the traditional humanities) express and preserve the wisdom of courageous men and women. For writers, artists, and spiritual leaders, the humanities represent a landscape in which human potential can be explored. For scientists and social scientists, the humanities provide a structure of accountability for the consequences of the knowledge they create. At this stage of scientific development, when a lack of moral judgment can lead to global destruction, it is imperative that society guide the use of scientific advances by ethical standards so that knowledge may be used for human betterment and not to destroy.

2500 years ago, in *Prometheus Bound*, Aeschylus presented the hope of creativity

and the fear of the loss of knowledge:

> "I found them (humankind) witless and gave them the use of their wits
> and made them masters of their minds ...
>
> For men at first had eyes but saw to no purpose:
> They had ears but did not hear. Like the shapes
> of dreams, they dragged through their long lives
> and handled all things in bewilderment and confusion ...
>
> They lived like swarming ants in holes in the ground,
> and in the sunless caves of the earth ... All their
> doings were indeed without intelligent calculation
> until I showed them the rising of the stars, and the
> settings, hard to observe. And further I discovered
> to them numbering, pre-eminent among the subtle devices,
> And the combining of letters as a means of remembering
> All things ...
>
> I first adjudged what things come verily true
> from dreams; and to men I gave meaning to the
> ominous cries, hard to interpret.
>
> ... All arts that mortals have come from Prometheus."

In his struggle against the tyranny of Zeus, Prometheus retains his faith in humankind but is warned by the Chorus: "You regard mortal men too highly."

Children should experience the connection between questing and joy, the fundamental relationship between the science and humanities. A few years ago I read an article by Albert Sent-Gyõrgyi in *Science* on "Teaching and The Expanding Knowledge." I rewrote the article for second-grade children. Here is a part of that message:

> "All around our world are people writing stories and poems, and people reading them, and people writing music and people making music and dancing, and artists painting pictures, and people being pleased or surprised by them. All around the world people are working hard to make our world a healthier place. All around our world people are working hard to produce more food to bring to the hungry. Making our little world a better place takes a lot of work. Science helps us to do this work. But this work must be combined with good feeling for our world, which helps us to work better."

Let me finish my paper with a Navajo prayer with which I ended my sixth-grade social studies program. The prayer expresses the desire for harmony between man and nature:

"In beauty may I walk. All day long may I walk.
Through the returning seasons may I walk.
On the trail marked with pollen may I walk.
With grasshoppers about my feet may I walk.
With dew about my feet may I walk.
With beauty may I walk.
With beauty behind me may I walk.
With beauty above me may I walk.
With beauty all around may I walk.
In old age, wandering on a trail of beauty,
    lively may I walk.
In old age, wandering on a trail of beauty,
    living again, may I walk.
It is finished in beauty.
It is finished in beauty."

APPENDIX

Chart 1

Fundamental Ideas of General Systems Theory

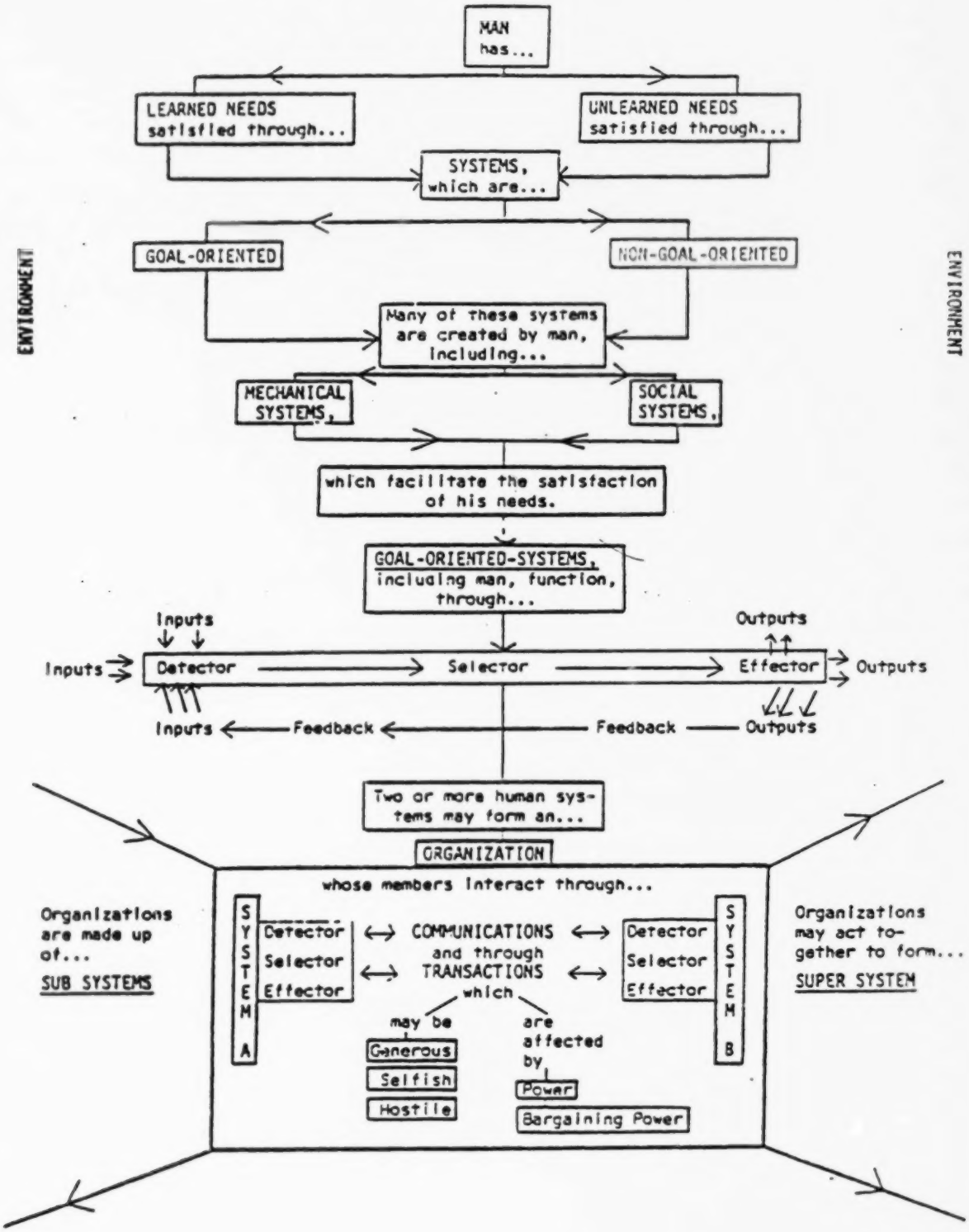


Chart 2: Fundamental Ideas of Economics

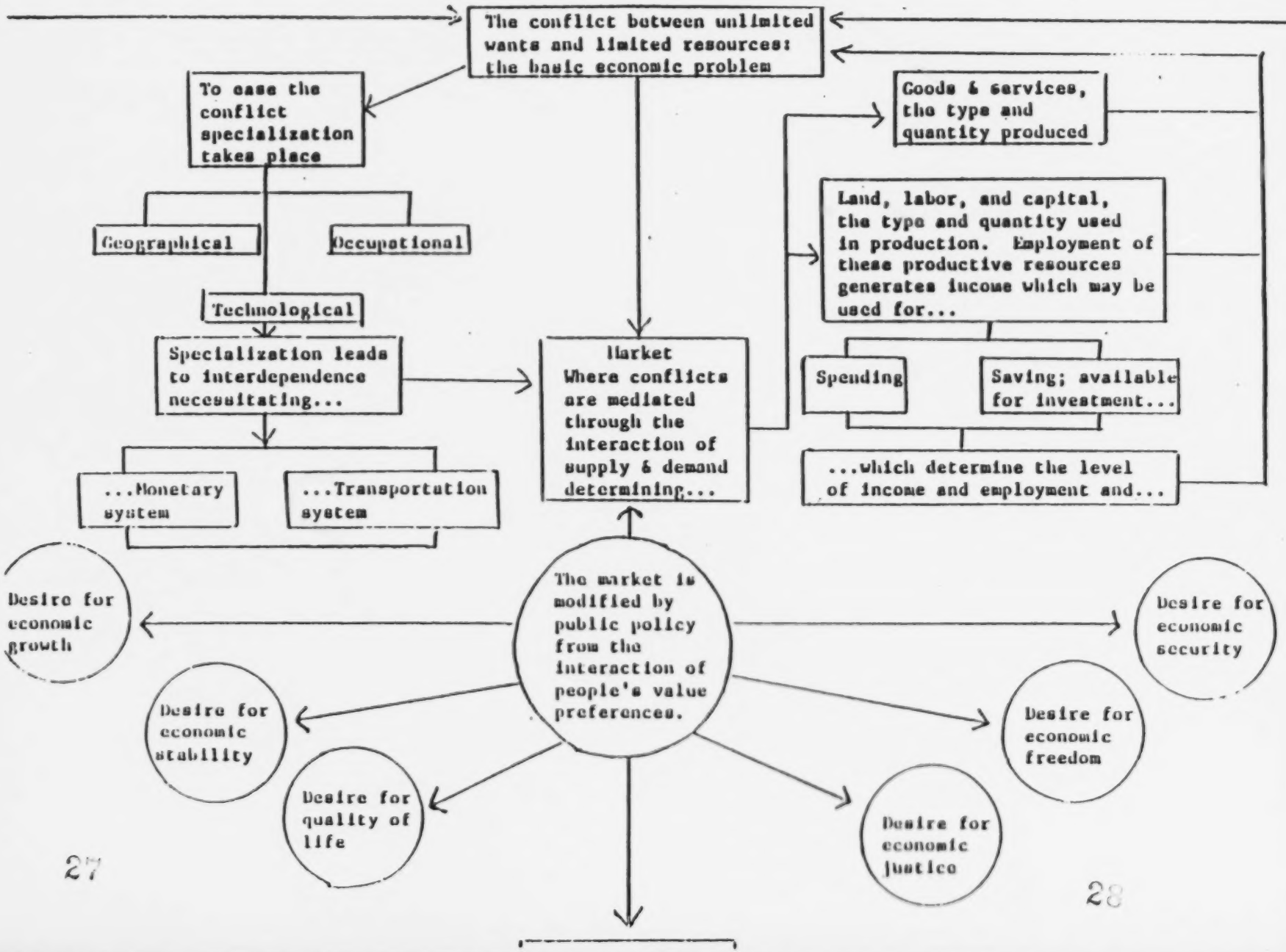

The conflict between unlimited wants and limited resources: the basic economic problem
To ease the conflict specialization takes place
Geographical
Occupational
Technological
Specialization leads to interdependence necessitating...
...Monetary system
...Transportation system
Market Where conflicts are mediated through the interaction of supply & demand determining...
Goods & services, the type and quantity produced
Land, labor, and capital, the type and quantity used in production. Employment of these productive resources generates income which may be used for...
Spending
Saving; available for investment...
...which determine the level of income and employment and...
The market is modified by public policy from the interaction of people's value preferences.
Desire for economic growth
Desire for economic security
Desire for economic stability
Desire for economic freedom
Desire for quality of life
Desire for economic justice

Chart 3

FUNDAMENTAL IDEAS OF POLITICAL SCIENCE

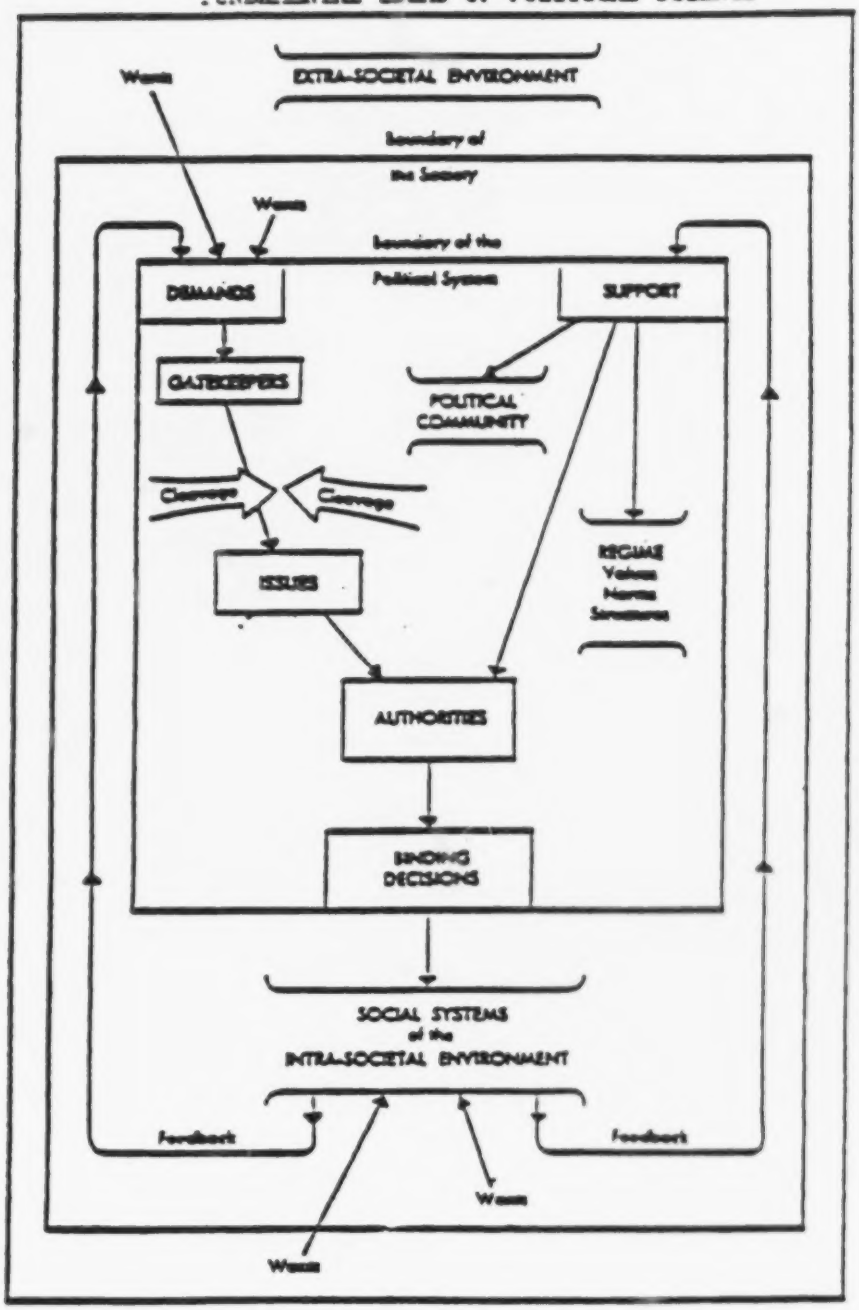


Chart 4

FUNDAMENTAL IDEAS OF SOCIOLOGY

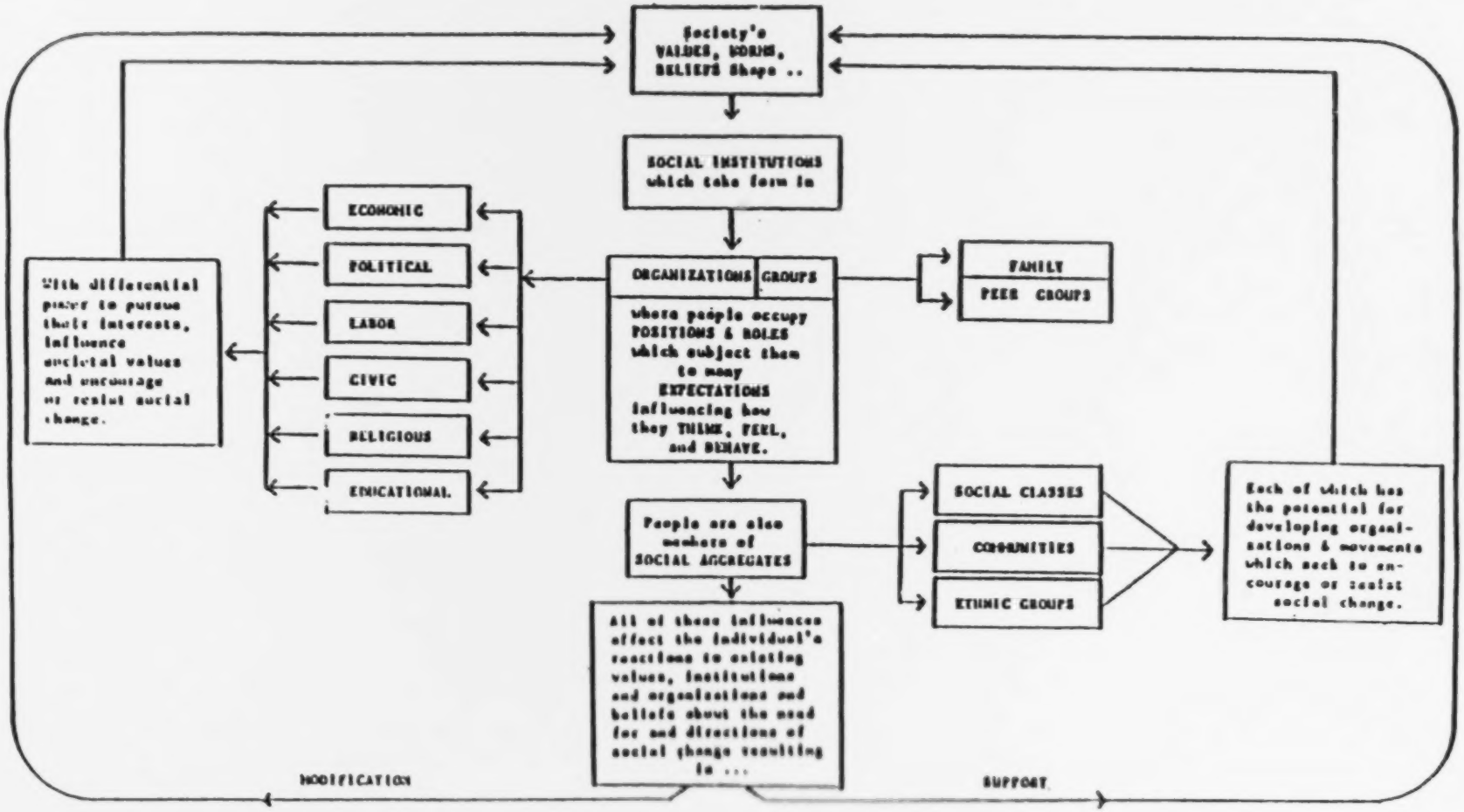

Society's VALUES, NORMS, BELIEFS Shape ..
SOCIAL INSTITUTIONS which take form in
ECONOMIC
POLITICAL
LABOR
CIVIC
RELIGIOUS
EDUCATIONAL
With differential power to pursue their interests, influence societal values and encourage or resist social change.
ORGANIZATIONS GROUPS
where people occupy POSITIONS & ROLES which subject them to many EXPECTATIONS influencing how they THINK, FEEL, and BEHAVE.
FAMILY
PEER GROUPS
People are also members of SOCIAL AGGREGATES
SOCIAL CLASSES
COMMUNITIES
ETHNIC GROUPS
Each of which has the potential for developing organizations & movements which seek to encourage or resist social change.
All of these influences effect the individual's reactions to existing values, institutions and organizations and beliefs about the need for and directions of social change resulting in ...
MODIFICATION
SUPPORT

Chart 5

FUNDAMENTAL IDEAS OF CULTURAL ANTHROPOLOGY

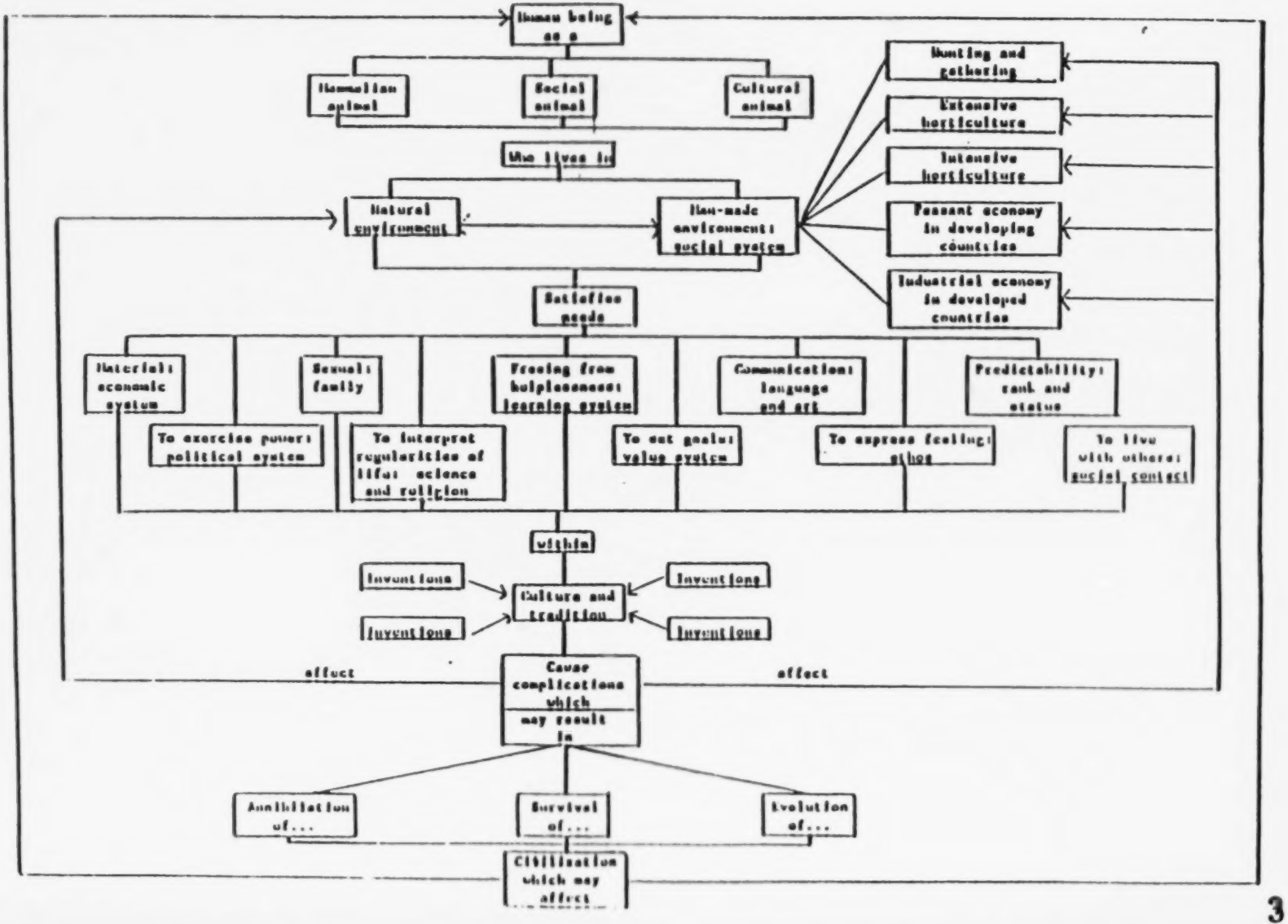
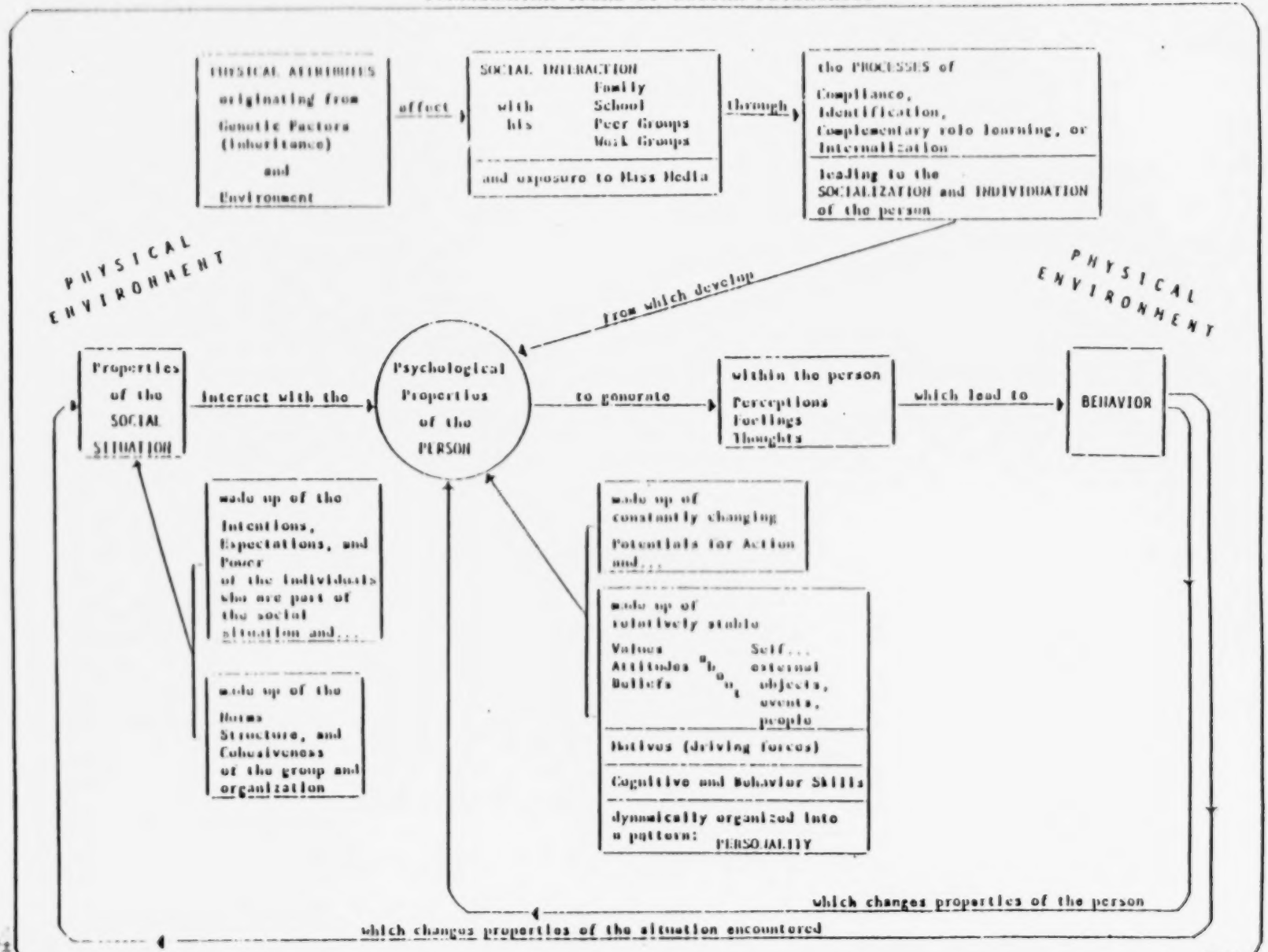


CHART 6

FUNDAMENTAL IDEAS OF SOCIAL PSYCHOLOGY


PHYSICAL ENVIRONMENT
PHYSICAL ENVIRONMENT
PHYSICAL ATTRIBUTES originating from Genetic Factors (Inheritance) and Environment
affect
SOCIAL INTERACTION with his Family School Peer Groups Work Groups and exposure to Mass Media
through
the PROCESSES of Compliance, Identification, Complementary role learning, or Internalization leading to the SOCIALIZATION and INDIVIDUATION of the person
from which develop
Properties of the SOCIAL SITUATION
interact with the
Psychological Properties of the PERSON
to generate
within the person Perceptions Feelings Thoughts
which lead to
BEHAVIOR
made up of the Intentions, Expectations, and Power of the individuals who are part of the social situation and...
made up of the Norms Structure, and Cohesiveness of the group and organization
made up of constantly changing Potentials for Action and...
made up of relatively stable Values Attitudes Beliefs a_b a_o a_t Self... external objects, events, people
Motives (driving forces)
Cognitive and Behavior Skills
dynamically organized into a pattern: PERSONALITY
which changes properties of the person
which changes properties of the situation encountered